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tended; in the viscera of these animals there is, however, a more marked difference.

The bones of the Sumatran tapir closely resemble those of the American, but the skull of the former has a broader frontal bone, and no middle ridge; the nasal bones are larger, giving a proportionate increased dimension to the nostrils. The skeleton of the tapir differs from that of the rhinoceros in the smaller extent of the scapulæ and pelvis.

The stomach of the Sumatran tapir is shaped like that of the rhinoceros; the œsophagus is smooth and cuticular; the small intestines are 69 feet long; the length and greatest breadth of the cæcum is 1 foot; the length of the colon and rectum is 19 feet 6 inches; the spleen is long and narrow; the kidneys conglobate; and the lungs composed of one principal lobe on each side, of considerable length, and two smaller lobes.

On the Mean Density of the Earth. By Dr. Charles Hutton, F.R.S.
Read April 5, 1821. [*Phil. Trans.* 1821, p. 276.]

Since the first notice of the determination of the mean density of the earth by Newton, two experimental inquiries only have been undertaken in relation to it; namely, in the case of the Schellien experiment by the author and by Dr. Maskelyne; and by Mr. Cavendish, who used a method invented by Mr. Mitchell.

Dr. Hutton proposes in this paper to show by a statement of, and observations upon, the two methods, that the preference, in point of accuracy, belongs to the mountain experiment over that of the small balls employed by Mr. Cavendish; and the results of this experiment, duly corrected by that of Mr. Playfair's lithological survey of the mountain, give the mean density of the earth equal to 5 times the density of water, and not 4.5, a number unfairly assumed on some occasions, as the author's final determination.

In adverting to the advantage that might result from a repetition of the mountain experiment in some other favourable situation, and with improved means, Dr. Hutton suggests the employment of one of the large pyramids of Egypt for the purpose. The mass, he says, is sufficiently large, and the station for the plummet or zenith sector might be taken much nearer the centre of the mass than on a mountain, which would give a larger quantity of deviation of the plummet.

The regular figure and known composition of the mass would also yield facilities in calculating its attraction; and, moreover, the deviation of the plummet might be observed on all four sides.

On the Separation of Iron from other Metals. By J. F. W. Herschel, Esq. F.R.S. Read April 5, 1821. [*Phil. Trans.* 1821, p. 293.]

After adverting to the importance of an easy means of effecting the above purpose in analytical inquiries, and to the insufficiency of

the usual methods hitherto described, the author proposes the following process. The solution containing the iron is to be peroxidized by nitric acid, then neutralized while boiling by carbonate of ammonium; the iron falls, while the other metals, which Mr. Herschel supposes to be manganese, cerium, nickel, and cobalt, remain in solution. A few precautions are necessary to insure success in this operation; such as, that the solution must contain no oxide of manganese or cerium, except in their states of protoxide; and that during the precipitation the solution should be duly diluted and agitated; and the latter portions of the alkaline solution, carefully added so as to avoid its excess, though slightly surpassing the point of saturation, give rise to no error or inconvenience.

Mr. Herschel concludes this paper with some observations respecting those peculiarities of the peroxide upon which its separation in the above cases depends, and gives some instances of its application to practical analysis.

On the Re-establishment of a Canal in the Place of a Portion of the Urethra which had been destroyed. By Henry Earle, Esq. Surgeon to the Foundling, and Assistant Surgeon to St. Bartholomew's Hospital. Communicated by Sir Humphry Davy, Bart. P.R.S. Read April 12, 1821. [Phil. Trans. 1821, p. 300.]

In this paper Mr. Earle details the case of a man whose urethra was much injured in the perineum by a fall in the year 1813, and who continued to suffer difficulty of making water till 1819, when he was attacked with retention of urine, followed by effusion and mortification; by which the integuments of the perineum, and more than an inch of the canal of the urethra, sloughed away; forming afterwards a large smooth cicatrix, above and below which the mucous membrane was still visible. After properly dilating the anterior part of the urethra, Mr. Earle performed the following operation:—A portion of integument was removed, about $1\frac{1}{2}$ inch long and $\frac{1}{4}$ inch wide, on the left side of the cicatrix; an incision was then made across the perineum, so as to pare away the callous edges of the urethra, and the cutis dissected from a portion of the integument on the right side of the perineum, leaving a smooth space between the cut surfaces to form the lining of the new canal. The integuments on the right side were then dissected up, turned over a catheter, and brought in contact with the opposite groove, being kept in their place by two ligatures, some straps of adhesive plaster, and a bandage. This first operation was attended with partial success; and the patient's general health being disordered, nothing further was done till the summer of 1820, when a second operation was performed as follows:—A deep groove was made on the right side of the surface denuded of its cutis; a portion of integument was then detached from the left side, and properly retained by the quill suture and adhesive plaster. About two thirds of the canal were thus completed; and by a third operation, upon a smaller scale, the cure was ultimately